IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Patent Application of

NAKAYAMA et al. Atty. Ref.: 249-336 (AMK)

Serial No. 10/812,304 TC/A.U.: 3726

Filed: March 30, 2004 Examiner: S. Afzali

For: DISC ROLL (AS AMENDED)

* *

January 19, 2010

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

APPEAL BRIEF

Sir:

Appellants hereby **appeal** to the Board of Patent Appeals and Interferences from the last decision of the Examiner.

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(I) REAL PARTY IN INTEREST

The real party in interest is Nichias Corporation.

(II) RELATED APPEALS AND INTERFERENCES

The Appellants, the undersigned, and the assignee are not aware of any related appeals, interferences, or judicial proceedings (past or present), which will directly affect or be directly affected by or have a bearing on the Board's decision in this Appeal.

(III) STATUS OF CLAIMS

Claims 1-11, 14-19 and 22-26 are present in this application. Claims 12, 13, 20 and 21 have been canceled. Claims 1-9 and 14-19 have been withdrawn from consideration. Claims 10, 11 and 22-26 have been rejected and are on appeal.

(IV) STATUS OF AMENDMENTS

An Amendment After Final Rejection was filed on August 5, 2009. In an Advisory Action dated September 1, 2009, the Examiner indicated that the August 5 Amendment would be entered upon filing an Appeal.

(V) SUMMARY OF CLAIMED SUBJECT MATTER AND SPECIFIC SUPPORT FOR INDEPENDENT CLAIM 10

The invention relates to a disc roll comprising a plurality of annular disc members fitted together on a rotary shaft by insertion to form a conveying surface suitable for the production of high-grade plate glass.

Claim 10

The disc roll includes a plurality of annular disc members 12 each defining a hole and having a peripheral surface. A rotary shaft 11 is fitted into the holes of the annular disc members 12 by insertion. The peripheral surfaces of the disc members 12 serve as a conveying surface of the disc roll. See the exemplary disc roll shown in Fig. 1. The disc members 12 comprise an inorganic fiber, mica and clay having a content of particles with a particle size of 5 μm or larger of not higher than 30% by weight based on the weight of the clay, the clay being either elutriated or subjected to a wet sizing separation purification process. See page 12, line 23 - page 15, line 13, and page 18, lines 9-16, and page 20, lines 6-15.

The inorganic fiber is present in an amount of 5-40% by weight based on the total weight of the disc members, and the clay is present in an amount of 20-40% by weight based on the total weight of the disc members. The mica is present in an amount of 5-60% by weight based on the total weight of the disc members. See page 22, line 14 - page 23, line 2.

Features of the Dependent Claims

In an exemplary arrangement, the mica is muscovite. See page 15, line 14. The clay may be kibushi clay (see page 18, lines 17-18), and the clay may have a content of

particles with a particle size of 5 μm or larger of not higher than 15% by weight based on the weight of clay (see page 19, lines 1-10). In a preferred arrangement, the clay has a content of impurities of 10% by weight or less based on the weight of the clay. See page 19, lines 1-10. The mica may have an average of particle size of 5-500 μm. See page 22, lines 4-13.

(VI) GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

1. Whether claims 10, 22, 24 and 25 are unpatentable under 35 U.S.C. §103(a) over U.S. Published Patent Application No. 2003/0181302 to Kaiser et al. in view of U.S. Patent No. 5,763,345 to Ohshima et al.

2. Whether claims 11 and 26 are unpatentable under 35 U.S.C. §103(a) over Kaiser in view of Ohshima and U.S. Patent No. 4,533,581 to Asaumi et al.

3. Whether claim 23 is unpatentable under 35 U.S.C. §103(a) over Kaiser in view of Ohshima and U.S. Patent No. 4,533,968 to Yoshida et al.

(VII) ARGUMENT

1. Claims 10, 22, 24 and 25 are not unpatentable under 35 U.S.C. §103(a) over Kaiser in view of Ohshima et al.

The clay defined according to the claimed invention has a specific particle diameter distribution (in which 70% by weight or more of the particles have a particle size of 5 μm or smaller). Such clay having a narrow particle diameter distribution provides a greater binding effect and is excellent in wear resistance. The effect cannot be sufficiently obtained, however, unless the clay is used in a given amount or higher. With reference to the comparative examples described in the specification, it has been determined that the lower limit of the amount of the specific clay for attaining practically favorable surface hardness and wear resistance is 20% by weight. In addition, when the clay amount is from 30 to 40% by weight, further superior results are obtained as shown with reference to Examples 4B and 5B.

With regard to the upper limit, in Example 6B, elutriated clay was used in an amount larger than the claimed range (50% by weight versus 20-40% by weight), and scratches were caused on glass. Even if elutriation treatment is carried out, impurities cannot be removed completely. Therefore, when elutriated clay is used in an excess amount, an effect of the impurities develops. According to the claimed invention, the amount of the specific clay is limited (i.e., 40% by weight at the most), which thereby prevents damage to the plate glass while maintaining good wear resistance.

In contrast, the Kaiser publication references a heat resistant binder (clay) content of 40-50% by weight. Appellants acknowledge that an abutting range (i.e., the lower limit 40% in Kaiser) in the prior art establishes a *prima facie* case of obviousness. It is well settled, however, that an Appellant may overcome a prima facie case of obviousness by establishing "that the [claimed] range is critical, generally by showing that the claimed range achieves unexpected results relative to the prior art range." *In re Geisler*, 116 F.3d at 1469-70, 43 USPQ2d at 1365 (alteration in original) (quoting *In re Woodruff*, 919 F.2d at 1578, 16 USPQ2d at 1936). See also, *In re Wertheim*, 541 F.2d 257, 267, 191 USPQ

90, 100 (CCPA 1976) (recognizing that "ranges which overlap or lie inside ranges disclosed by the prior art may be patentable if the Appellant can show criticality in the claimed range by evidence of unexpected results"). Moreover, the Applicant's showing of unexpected results must be commensurate in scope with the claimed range. *In re Peterson*, 315 F.3d 1325, 65 USPQ2d 1379, 1383 (Fed. Cir. 2003). See also, *In re Soni*, 54 F.3d 746, 750, 34 USPQ2d 1684, 1687 (Fed. Cir. 1995) ("One way for a patent Applicant to rebut a prima facie case of obviousness is to make a showing of 'unexpected results,' i.e., to show that the claimed invention exhibits some superior property or advantage that a person of ordinary skill in the relevant art would have found surprising or unexpected."). When an Applicant seeks to overcome a *prima facie* case of obviousness by showing improved performance in a range that is within or overlaps with a range disclosed in the prior art, the Applicant must "show that the [claimed] range is critical, generally by showing that the claimed range achieves unexpected results relative to the prior art range." *In re Woodruff*, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

With reference to the comments above, Appellants respectfully submit that the defined maximum amount of specific clay at 40% by weight is a critical parameter that prevents damage to the plate glass while maintaining good wear resistance. Larger amounts as evidenced in Example 6B could result in scratches or other damage to the glass. The result amounts to a superior property and advantage that a person of ordinary skill in the art would have found surprising or unexpected. As such, Appellants submit that Kaiser and Ohshima fall short of the claimed invention, and Appellants submit that the rejection of claim 10 is misplaced.

In the "Response to Arguments" section of the May 5, 2009 Office Action, **the Examiner acknowledges that the claimed ranges are critical**. The Examiner refers, however, to the disclosure of numerous sections of the specification "that there is a wide range for each claimed 'content range' within which the invention would still perform equally well." It is clear from the description of the examples and the comments above, however, that the use of materials outside the claimed ranges in fact would not perform

"equally well." For example, as noted with regard to Example 6B, merely changing the clay content to 50% increased the plate glass susceptibility to damage and wear. Appellants thus respectfully disagree with the conclusion that those of ordinary skill in the art would have found the critical ranges to be obvious matters of design choice.

With regard to dependent claims 22, 24 and 25, Appellants submit that these claims are allowable at least by virtue of their dependency on an allowable independent claim. Moreover, with regard to claims 24 and 25, it is not mathematically impossible in Ohshima to have clay content of particles with a particle size of 5 μm or larger in an amount of 15% (claim 24) or 10% (claim 25) by weight based on the weight of the clay. The Ohshima patent is silent with regard to such clay content, and thus should not be applicable against these claims. For this reason also, Appellants submit that the rejection of claims 24 and 25 is misplaced.

In reply to the Examiner's comments in the "Continuation Sheet" of the Advisory Action, Appellants note that in a practical application, it is important that the scratches in the glass be almost entirely eliminated. When a produced glass plate includes scratches, even in a small number (such as 1), it deteriorates the yield. Furthermore, it causes serious trouble in a subsequent step at a user side. Therefore, even when only one glass scratch is found, manufacturers are forced to inspect every product (glass plate) within the same lot so as to confirm the presence/absence of a scratch. In addition, examination of equipment over the whole production line may be necessitated in order to specify the cause or origin of the scratch. Such inspection of products and examination of equipment require considerable time and effort, resulting in unnecessary costs and a heavy burden to manufacturers.

Though the "wear resistance" is an important evaluation item, it is not as important as characteristics that could result in a scratch. This is because even when the wear resistance of the roll is somewhat inferior, it merely somewhat advances the time for replacing the roll. Thus, a lesser burden is imposed on the manufacturers.

Reversal of the rejection is respectfully requested.

2. Claims 11 and 26 are not unpatentable under 35 U.S.C. §103(a) over Kaiser in view of Ohshima and Asaumi et al.

The Asaumi patent does not correct the deficiencies noted above with regard to Kaiser and Ohshima, taken singly or in combination. As such, Appellants submit that these dependent claims are allowable at least by virtue of their dependency on an allowable independent claim. Reversal of the rejection is requested.

3. *Claim 23 is not unpatentable under 35 U.S.C. §103(a) over Kaiser in view of Ohshima and Yoshida et al.*

The Yoshida patent does not correct the deficiencies noted above with regard to Kaiser and Ohshima. As such, Appellants submit that this dependent claim is allowable at least by virtue of its dependency on an allowable independent claim. Reversal of the rejection is requested.

CONCLUSION

In conclusion it is believed that the application is in clear condition for allowance; therefore, early reversal of the Final Rejection and passage of the subject application to issue are earnestly solicited.

Respectfully submitted,

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(VIII) CLAIMS APPENDIX

10. A disc roll comprising:

a plurality of annular disc members each defining a hole and having a peripheral surface; and

a rotary shaft fitted into the holes of said annular disc members by insertion, whereby the peripheral surfaces of said disc members serve as a conveying surface of the disc roll,

wherein said disc members comprise an inorganic fiber, mica and a clay having a content of particles with a particle size of 5 μm or larger of not higher than 30% by weight based on the weight of the clay, the clay being either elutriated or subjected to a wet sizing separation purification process,

wherein said inorganic fiber is present in an amount of 5 to 40% by weight based on the total weight of said disc members, and said clay is present in an amount of 20 to 40% by weight based on the total weight of said disc members, and

wherein said mica is present in an amount of 5 to 60% by weight based on the total weight of the disc member.

11. The disc roll according to claim 10, wherein said mica is muscovite.

22. The disc roll according to claim 10, wherein the amount of said clay is 30 to 40% by weight based on the total weight of said disc members.

23. The disc roll according to claim 10, wherein said clay is kibushi clay.

24. The disc roll according to claim 10, wherein said clay has a content of particles with a particle size of 5 μm or larger of not higher than 15% by weight based on the weight of the clay.

25. The disc roll according to claim 10, wherein said clay has a content of impurities of 10% by weight or less based on the weight of the clay.

26. The disc roll according to claim 10, wherein said mica has an average particle size of 5 to 500 μm.

(IX) EVIDENCE APPENDIX

(NOT APPLICABLE)

(X) RELATED PROCEEDINGS APPENDIX

(NOT APPLICABLE)